NOVOZHILOV, V. (UALDQ), sud'ya po radiosportu

Mass participation and technical skills are of the utrost importance. Radio no.10:14 0 '64.

(MIRA 18:2)

HOVOZHILOV, V.B., dotsent; SHUL'TS, I.M., nauchnyy sotrudnik.

Effect of the method for preparing rocks for analysis to determine granulometric composition, specific weight, and plastic limits.

Zap.Len.gor.inst.32 no.2:166-187 '56.

(Rocks-Analysis)

《新兴人》							
MOVOZHILOV,	٧	D					
The Applicat	ti, of lis	sue Therap/ in Zdravookhranen	tne Redical + iye Kazakhsta	reatment of Hy na, Vol 3, 195	poreactive and 62, pp 24-20.	*reactive	
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NOVOZHILOV. V.D.

Isolated transverse rupture of the duodenum in closed traume of the abdomen. Knirurgita 33 no.6:126-127 Je '57. (MIRA 10:12)

1. Iz Kirovskoy rayonnoy bol'nitsy Kaluzhskoy oblasti.
(DUODENUM, rupture
isolated transverse in closed traume of abdom., surg.)
(ABDOMEN, wounds and inj.
closed traume causing isolated transverse tear of duodenum)

HOVOZHILOV, V.D.

Successful treatment of a penetrating wound of the right ventricle.

Khirurgita 33 no.7:120 J1 '57. (MIRA 10:11)

1. Iz rayonnoy bol'nitay g.Kirova Kaluzhakoy oblasti
(HEART--WOUNDS AND INJURIES)

NOVOZHILOV, V. F.

Novozhilov, V. F.

"Investigation of the operation of the SRN-AA and SRN-AV seedling-planting machines." Moscow Order of Lenin Agricultural Academy imeni K. A. Timiryazev. Moscow, 1956. (Dissertation for the Degree of Candidate in Agricultural Sciences.)

Knizhraya Letopis' No. 25, 1956. Moscow.

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GORYACHKIN, M.I., kend.ekon.nauk, nauchnyy sotrudnik; RUSAKOV, G.K., kand.sel'skokhoz.nauk, nauchnyy sotrudnik; MASHEVICH, M.G., kand.sel'skokhoz.nauk, nauchnyy sotrudnik; MIADCHIKOV, S.M., kand.sel'skokhoz.nauk, nauchnyy sotrudnik; MIXEKSAMROV, M.P., kand.sel'skokhoz.nauk; BUTKEVICH, B.G., kand.sel'skokhoz.nauk; KORNEV, K.G., kand.sel'skokhoz.nauk; GRENTSOV, P.P., red.; PEVZNER, V.I., tekhn.red.; TRUKHINA, O.M., tekhn.red.

[Plotting technological charts] Kak sostavit' tekhnologicheskie karty, Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960, 78 p.

(MIRA 14:2)

1. Moscow. Vsesoyuznyy nauchno-issledcvatel'skiy institut ekonomiki sel'skogo khozyaystva. 2. Vsesoyuznyy nauchno-issledcvatel'skiy institut ekonomiki sel'skogo khozyaystva. (for Goryachkin, Rusakov, Mashkevich, Kladchikov, Novozhilov).

(Farm menagement)
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KLEMY SHEV, P.A.; KOZLOV, Ye.G.; BELOZERTSEV, A.G.; VOLODARSKIY, D.Ya.; GRACHEV, V.A.; KRUCHININ, M.I.; FILIDONOV, K.N.; KHLUDENEV, A.I.; ANDREYEV, P.P.; NOVOZHILOV, V.F.; GERSHANOV, S.V.; PYLAYEVA, A.P., red.; BALLOD, A.I., tekhn. red.; PEVZNER, V.I., tekhn. red.

[Economic efficiency of mechanization in agriculture] Ekonomicheskaia effektivnost' mekhanizatsii sel'skogo khoziaistva. Moskva, Izd-vo sel'khoz.lit-ry, zhurnalov i plakatov, 1961. 230 p. (MIRA 15:5)

1. Vsesoyuznyy nauchno-issledovatel skiy institut ekonomiki sel'skogo khozyaystva(for all except Pylayeva, Ballod, Pevzner).

(Farm mechanization)

HOVOZHILOV, V.I.; KULAKOV, I.N.

Automatic production line for manufacturing carcasses of springs fixed in continuous wattles. Der.prom. 8 no.2:16-17 F 159.

(MIRA 12:2)

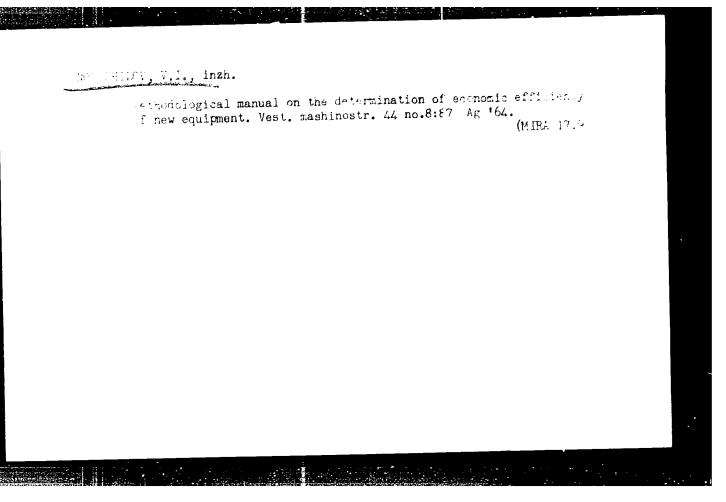
1. Komitet po delam izobrateniy i otkrytiy pri Sovete Ministrov SSSR.

(Furniture industry)

GRAF, L.E.; KOGAN, D.I.; NOVOZHILOV, V.I.

Hydraulic drill. Gor.shur. no.1s76 Ja '63. (MIRA 16s1)

(Boring machinery)



NOVOZHILOV, V.I., ispolnyayushchiy obyazannosti dotsenta

1. Rekomendovana kafedroy otopleniya i ventilyhtsii Moskovskogo instituta inzhenerov gorodskogo stroitel'stva Mosgorispolkoma.

(Radiant heating)

NOVOZHILOV, V.I.

Investigating the temperature field in air layers contiguous to a heated surface. Inzh.-fiz. zhur. no. 6:98-100 Je '53.(MIRA 11:7)

1. Institut inzhenernoy gorodskogo stroitel'stva Mosgorispolkoms, Moskva.

(Heat--Radiation and absorption)

Heat radiation and surface temperature of heating apparatus in flat-panel heating systems. Vod. i san. tekh. no. 182-8 0 '60. (MIRA 13:11) (Radiant heating)

BELOUS, N.Kh., st. nauchn. sotr.; KAZANSKIY, Yu.P.; VLOVIN. V.V.;

KIYAROVSKIY, V.M., KUZHETSOV. V.F., MIKOLAYEVA, I.V.;

NOVOZHILOV, V.I.; SENDERZON, E.M.; AKAYEV, M.S.; BABIN;

A.A.; BERDNIKOV, A.F.; GORYUKHIN., Ye.Ya.; NAGORSKIY, M.F.,

PIVEN', N.M.; BAKANOV, G.Ye., GEBLER, I.V.; SNOLYANINOV,

N.M.; SMOLYANINOVA, S.I.; YUSHIN. V.I., D'YAKONOVA, N.D.,

REZAPOV, N.M.; KASHTANOV, V.A. GOL'BE T, A.V.; SILOROV,

A.P.; GARRASH, A.A.; BYKOV. M.S., BORODIN, L.V.; AYCHKOV,

L.F.; KUCHIN, M.I.; SHAKHOV. F.N., glav. red.; SHIAKOVSKAYA,

L.I.; red.

[West Siberian iron pre basin] Zapadno-Sibirskii zwelezorudnyi bassein. Novosibirsk, Red.-izu. otde. Sibirskogo otdniia AN SSSR. 1964. 447 p. (MIRA 17:12)

l. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut geologil i geofiziki. 2. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR (for Belous: Kazanskiy, Vdevin, Klyarovskiy, Kuznetsov, Nikolayeva. Nevezhilov, Senderzon). 3. Institut gornogo dela (for Akayev). 4. Nevosibirskoye geologi sheskiye upravleniye Ministerstva geologii i okhrany nede SSS. (for Babin, Berdnikov, Goryukhin, Negorskiy, Piven). (Continued on next card)

BELOUS, N.Kh.---(continued) Card 2.

Tomskiy politekni obeskiy institut (for institut of smolyaninov, Smolyaninova, 5. Stot. - institut issledovate) skiy institut geologii, geofficial insineratinogo syriya(for Yushin, Doyakonova, Rezepov, Kashtanov, Golfbert), 5. Institut ekonomika selfologic kompayatva (for Garmash), 7. Shbirdakiy metalluqidhenkiy institut (for Bykov, monodin, hydhatv), 6. Tomskiy institut (for Bykov, monodin, hydhatv), 6. Tomskiy instemerne-stroitallyy institut (for Kuchologic, bear spendent AR USSR (for Shakhov).

SINYAKOV, V.I.; NOVOZHILOV, V.I.

Comparative study of the microhurdness of galenites from complex metal deposits in the Altal, eastern Transbakkalia, and the Maritime Territory. Geol. i geofiz. no.10:169-171 *64.

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SCAR, Novosibirsk.

15-57-1-1034

Referativnyy zhurnal, Geologiya, 1957, Nr 1, Translation from:

p 165 (USSR)

Novozhilov, V. N., Shul'ts, I. N. AUTHORS:

The Effect of the Method of Preparing Rocks on the TITLE:

Analyses to Determine Grain Size, Specific Gravity, and Limits of Plasticity (Vliyaniye sposoba rodgotovki porody k analizu na opredeleniye granulometricheskogo

THE STATE OF THE S

sostava, udel'nogo vesa i predelov plastichnosti)

Zap. Leningr. gorn. in-ta, 1955 (1956) Vol 32, Nr 2, PERIODICAL:

pp 166-187

By using a number of methods for preparing rocks for ABSTRACT:

analysis and by comparing the results obtained, the authors conclude that the best separation of rocks that contain large quantities of carbonates and gypsum (rocks of the Tatarian stage of the Permian system) is

obtained by treating with sodium pyrophosphate. They

Card 1/3

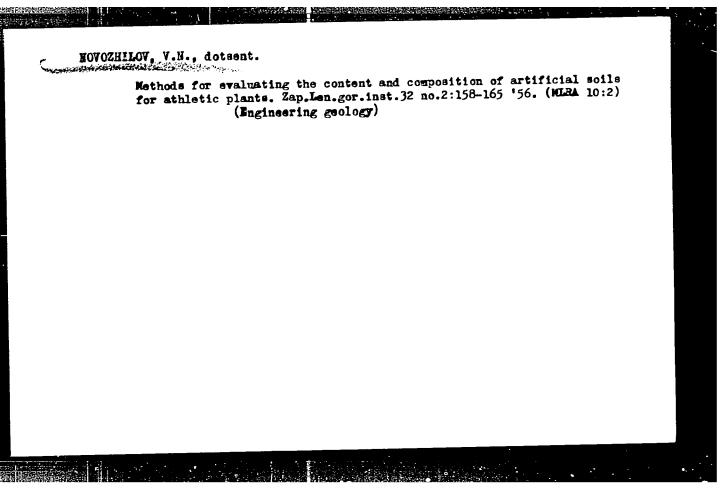
The Effect of the Method of Preparing Rocks (Cont.)

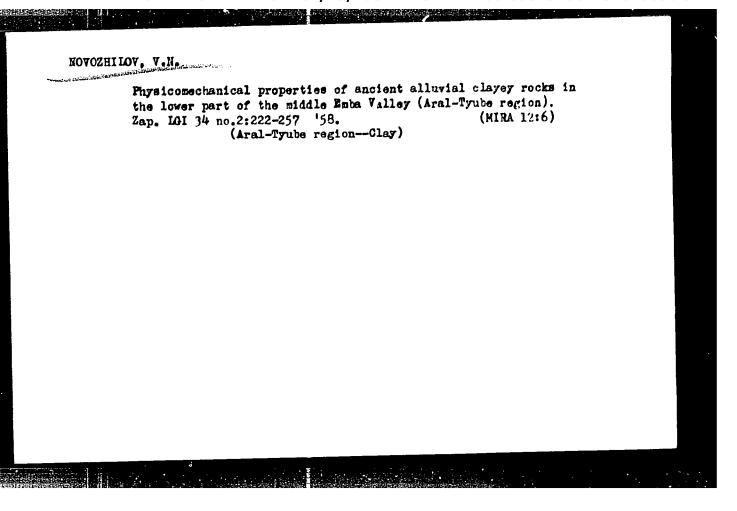
recommend a simple technique, requiring little time and no treatment with hydrochloric acid, for making grain-size analysis of high-carbonate marly rocks. A quantity of 10 g of rock is ground up with 10 ml saturated solution of sodium pyrophosphate. The pulverized mass is transferred to a conical flask and boiled for one hour with 200 ml of water. After boiling, the suspension is passed through a 0.25-mm screen into a cylinder and the sample is then drawn up by a pipette and the rate of fall of the particles is calculated according to Stoke's law. The method completely eliminates coagulation of the suspension and gives the best correspondence with the plasticity of the carbonate and gypseous rocks of the Tatarian stage in water, kerosene, and alcohol, all give approximately the same values. In kerosene, as a rule, the specific gravity is 0.02 less than in water. The degree of crushing of the sample, according to the authors, does not influence the value of specific gravity obtained. It is recommended that the specific gravity of such rocks be determined in Card 2/3

The Effect of the Method of Preparing Rocks (Cont.)

water by the standard method. The presence of carbonates and gypsum strongly diminishes the value of the plasticity number in comparison with determinations for the same rocks when washed with carbonates and salts. The authors recommend that the plasticity number of highly carbonatic clay rocks be determined by the universally accepted standard method.

[I. M. G.]





NOVOZHILOV, VN

MAKSIMOV, Vasil'iy Mikhaylovich, dotsent, kand.geologo-miner.nauk; ASATUR, K.G., dotsent, kand.tekhn.nauk; DAVIDOVICH, V.I., dotsent, kand. tekim.nauk; ALBUL, S.P., kand.geologo-miner.nauk; PAUKER, H.G., inzh.-gidrogeolog; OSTROUMOV, B.P., gidrotekhnik; ZAYTSEV, I.K., doktor geologo-miner.nauk; TOLSTIKHIN, N.I., prof., doktor geologomineral.nauk; REZNIKOV, A.A., kand.khim.nauk, starshiy nauchnyy sotrudnik; MERSHALOV, A.F., assistent; VOROTYNTSEV, V.T., dotsent, kand.tekhn.neuk; MARKOV, I.A., dotsent, kand.geologo-miner.neuk; KERKIS, Ye.Ye., dotsent, kand.geologo-miner.nauk; KHITROV, I.N., ingh.-geolog: BOROVITSKIY, V.P., kand.geologo-miner.nauk; RAVDONIKAS, O.V., kand.geologo-miner.nauk; ONIN, N.M., kand.geologo-miner.nauk; BASKOV, Ye.A., inzh.-gidrogeolog; NOVOZHILOV dotsent, kand. geologo-miner.nauk; PEKEL'NYY, I.S., inzh.-gidrogeolog; NEVKL'SHTEYN, Yu.G., inzh.-gidrogeolog; BOSKIS, S.G., inzh.-gidrotekhnik; NIKIFOROV. Ye.M., inzh.-gidrogeolog; GATAL'SKIY, M.A., prof., doktor geologominer.nauk, nauchnyy red.; DOLMATOV, P. J. veduchchiy red.; GEN. MAD'YEVA, I.M., tekhn.red.

[Hydrologist's handbook] Spravochnoe rukovodstvo gidrogeologa.
Leningrad, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry.
Leningr.otd-nie, 1959. 836 p. (MIRA 12:4)

1. Vsesoyuznyy geologicheskiy nauchno-issledovatel'skiy institut (for Reznikov).

(Hydrology)

SOY/3-59-5-27/34 22(1) Tolstikhin H.I., Doctor of Geologic-Mineralogical Sciences, Professor, Novozhilov, V.N., Jandidate M12 % R: of Geologic-Mineralogical Sciences; Docent Intervuz Scientific Conferences. Problems of Training Mining Engineer-Hydrogeologists. TITL: Vestnik vysshey shkoly, 1959, Nr 5, p 85 (MSSL) FERRICAL) I: The problem of improving the practical and scientific-theoretical training of mining engineer-hydro-ABSIALJI: geologists has been raised. The Leningradskiy Jornantitut (Leningrad Mining Institute) levoted its conference, which took place in February this year, to this subject. In addition to 300 students, the conference was attended by workers of geological production organizations, collaborators of design and scientific research institutes of the Ukraine, Estonia, Lithuania, Kola Peninsula, the Urals, Jard 1/4

30V/3-59-5-27/34

Intervuz Jeientific Jonferences. Problems of Training Mining Engineer-Hydrogeologists.

Siberia, Sakhalin, Central Asia, Moscow and Leningrad, as well as by vuz instructors of hydrogeology and engineering geology. Forty-five reports devoted to theoretical, methodological and practical problems of hydrogeology and engineering geology were discussed at the meetings. The report of Doctor of Geologic-Mineralogical Sciences, Professor F.A. Makarenko (Laboratoriya gidrogeologicheskikh problem AN SSSR - Laboratory of Hydro-Geological Iroblems of the AS USSR) - "The Thermal Waters of the USSR as a Source of Thermal Energy" aroused great interest. The address of Professor N.I. Polstikhin of the Leningrad Mining Institute was ledicated to the genetic classification of underground waters. Docent V.D. Lomtadze of the same institut dealt in his report with the "Basic Problems of the Formation of Physico-Mechanical Properties in Clay Layers". V.A. Krotova, Scientific

Card 2/4

SOV/3-59-5-27/34

Intervaz Scientific Conferences. Problems of Training Mining Engineer-Hydrogeologists.

Morker of the Vsesoyuznyy neftyanoy geologorazvedochnyy institut (All-Union Oil GeologicProspecting Institute), reported on the plutonic
brines of the Volga-Ural Oblast and Eastern Siberia;
Engineer of the Lenmetroproyekt R.N. Kremneva- on
the engineering-geological and hydrogeological conditions of the Leningrad subway. A special plenary
meeting discussed the new curriculum of the specialty "Hydrogeology and Engineering Geology", and the
programs of basic subjects. The indications and
wishes expressed were taken into consideration when
working out the curriculum and programs. Gostoptekhvorking out the curriculum and programs. Gostoptekhizdat published in time for the conference "The
Hydrogeologist's Reference Book". Simultaneously
with the conference, a large exhibition of hydrogeological devices, field laboratories, engineeringgeological equipment, students graduation designs

Card 5/4

SCV/3-59-5-27/34

Intervuz Scientific Conferences. Iroblems of Training Mining Engineer-Hydrogeologists.

etc. was opened. The first copy of the hydrogeological chart of the USSR was displayed at the exhibition. The chart was drawn up under the direction of Doctor of Geologic-Mineralogical Sciences I.K. Zaytsev.

ACCC MANION: Leningradskiy gornyy institut imeni G.V. Fle - knanova (Leningrad Mining Institute imeni G.V. Flekhanov).

Card 4/4

KLIMENTOV, Petr Platonovich; PYKHACHEV, Georgiy Borisovich; TOLSTIKHIN, N.I., prof., retsenzent; SHAGOYANTS, S.A., prof., retsenzent; DA-VIDOVICH, V.I., dots., retsenzent; ASATUR, K.G., dots., retsenzent; NOVOZHILOV, V.N., dots., retsenzent; PAUKER, N.G., starshiy nauch. sotr., retsenzent; KRASIL'NIKOVA, N.P., ass., retsenzent; ABRAMOVA, S.K., otv. red.; SLAVOROSOV, A.Kh., red. izd-va; IL'INSKAYA, G.M., tekhn. red.

[Dynamics of underground water] Dinamika podzemnykh vod. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 514 p.
(MIRA 14:12)

(Water, Underground)

NOVOZHILOV, V.N.

Field apparatus for preparing film monoliths. Isv. vys. ucheb. sav.; geol. 1 resv. 4 no.3:129-130 Mr. 161. (MRA 14:6)

1. Leningradskiy gornyy institut imeni G.V. Plekhanova. (Rocks, Sedimentary—Analysis)

NOVOZHILOV, V.N.; LEKHTIMYAKI, E.V.

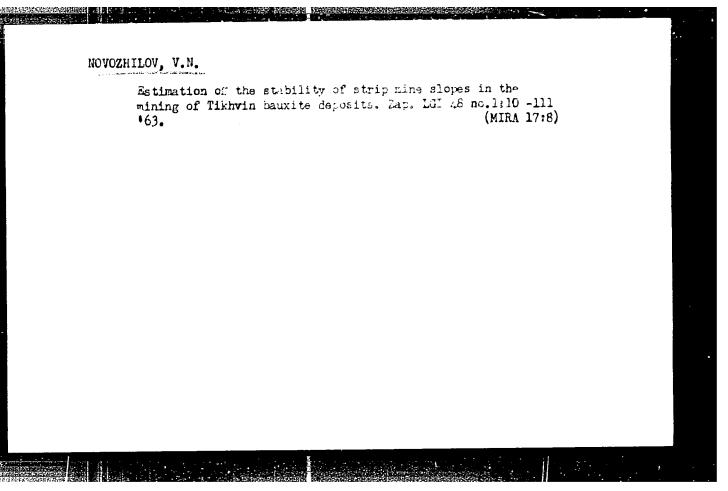
Trend in draining bauxite deposits in Tikhvin District. Zap.

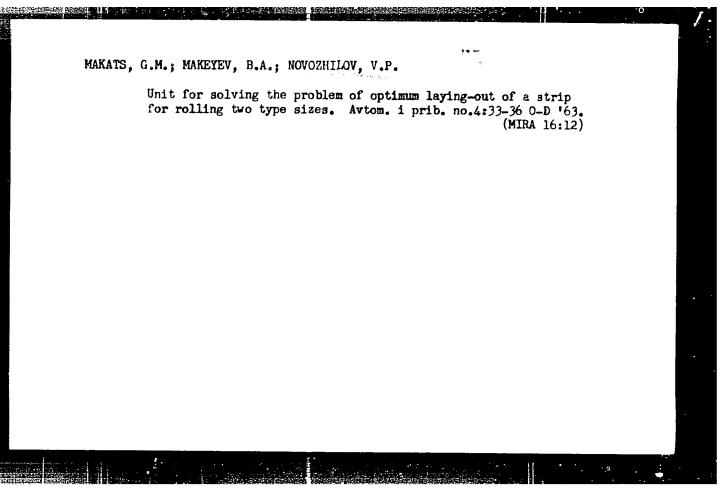
IGI 44 no.2:109-117 '62. (MIRA 16:3)

(Tikhvin District--Mine drainage) (Tikhvin District--Bauxite)

NOVOZHILOV, V.N.

Phydicomechanical properties of overburden rocks in the deposit of Tikhvin bauxites. Zap. LGI 44 no.2:152-162 '62. (MIRA 16:3) (Tikhvin District--Rocks) (Tikhvin District--Bauxite)





NOVOZHILOV, V.V.

Regularities concerning the development of cost calculation. Trudy LIEI no.44:9-33 'c3.

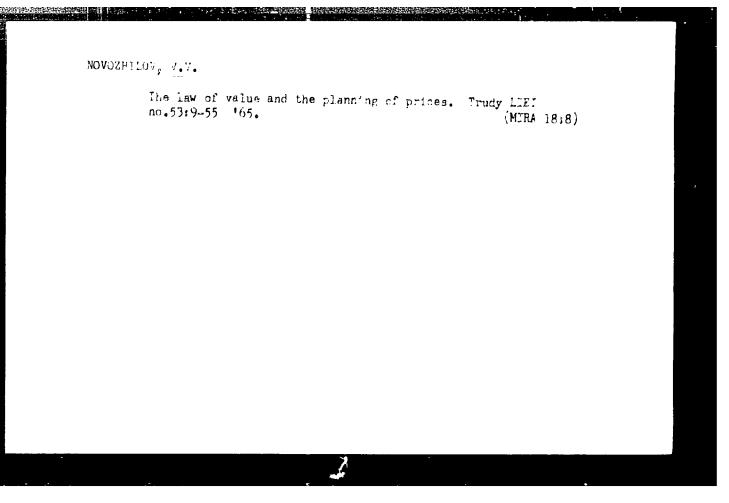
Tendencies in the development of measuring labor productivity in the '.S.S.R. Ibid.: 34-43

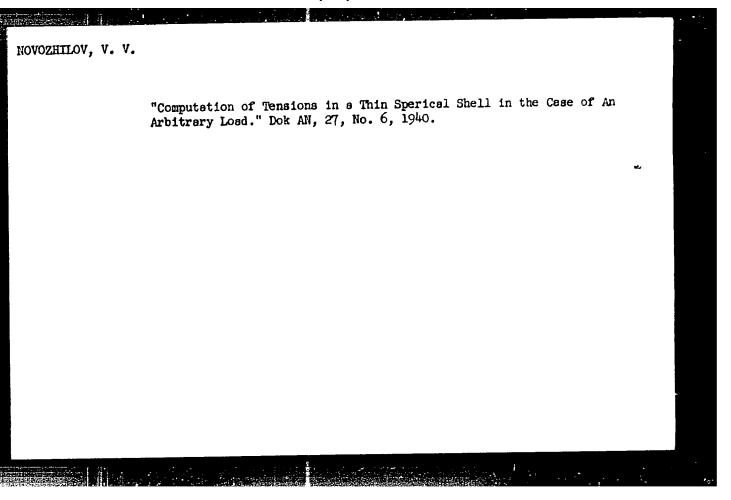
Methods for determining the optimal operational life of machinery. Ibid.: 1/1-70 (MIRA 17:9)

NOVOZHILOV, V.V., doktor ekon. nauk, prof., otv. red.; LAN. KAYA, K.A., red.

[Mathematicoeconomic problems; transactions] Extensitions ekonomicheskie problemy; trudy. Leningrad, lad-vo arringramiv., 163. 88 p. (MIRA 17:7)

1. Leningradskaya konferentsiya po voprosam primeneniya matematiki v sotsialisticheskoy ekonomike. 1st, 1961.



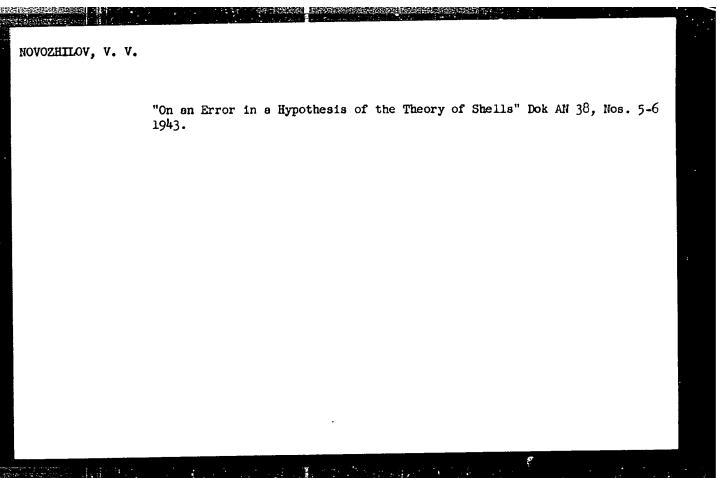


NOVOZHILOV, V. V.

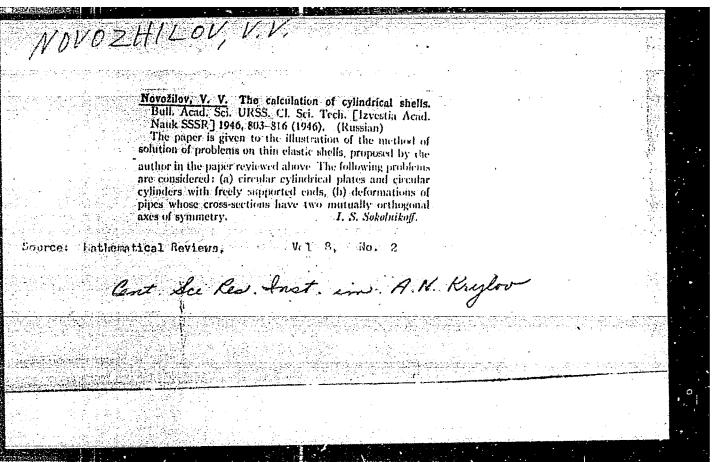
"General Theory of Stability of Thin Shells." Dok AN 32, No. 5, 1941.

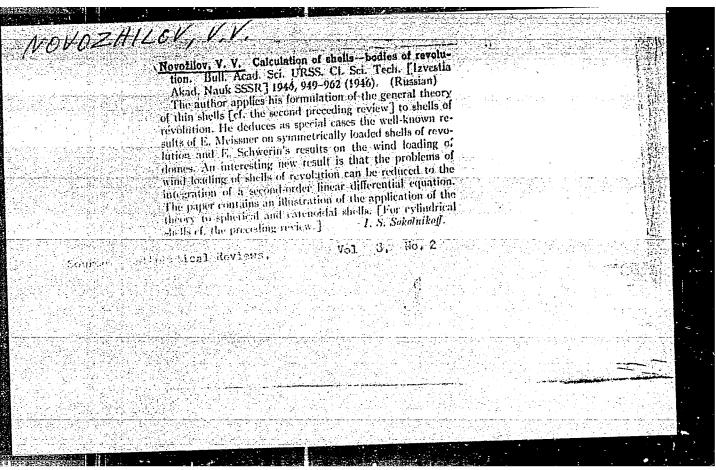
NOVOZHILOV, V. V.

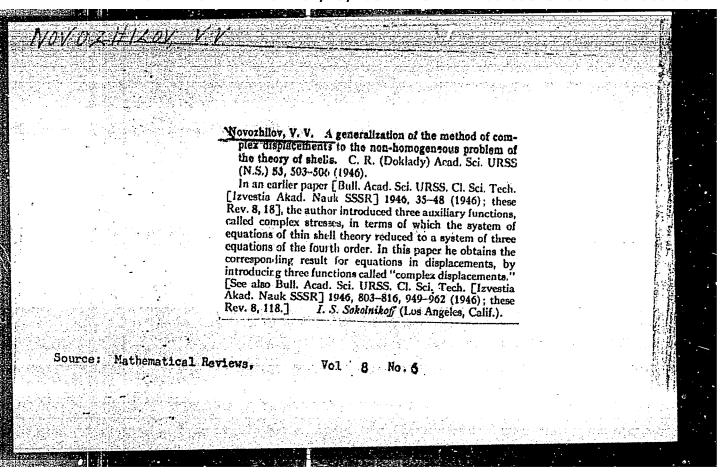
"On the Solution of Thin Shell Theory Problems in Stresses and Moments"
Dok AN No. 9, 1943.



OVOZHILOV, V V Novolilov, V. V. New method for the calculation of thin shells. Bull. Acad. Sci. URSS. Cl. Sci. Tech. [Izvestia Akad. Nauk SSSR] 1946, 35-48 (1946). (Russian) The author adjoins to the classical Kirchhoff-Love equations of thin shells three equations of compatibility deduced by A. Goldenweiser [Appl. Math. Mech. [Akad. Nauk SSSR. Prik]. Mat. Mech.] 4, 35-42 (1940); 8, 3-14 (1944); these Rev. 6, 251] and derives a system of six differential equations (of eighth order) for the stresses. If Poisson's ratio μ is set equal to zero, the system becomes symmetric with respect to a combination of stresses, so that by introducing new dependent variables it can be reduced to a system of three equations of the fourth order. The resulting equations call for no simplifications beyond those implicit in the Kirchhoff-Love theory. By neglecting, in the equations of equilibrium and compatibility, certain terms of the order δ/R (δ , thickness of the shell; R_i radius of curvature) the original eighth-order system can be reduced to a fourthorder system when and. This latter result can be viewed as a generalization of Meissner's theory of symmetric deformation of shells of revolution, The author states that his form Jation of the problem greatly simplifies the solution of several classes of problems. in shell theory and promises to publish soon his results on pipes of arbitrary cross-section and in shells of revolution of arbitrary form. I. S. Sokolnikoff (Les Angeles, Calif.). Vol. 8, No. 2 Source: Mathematical Reviews







MOVOCHILOV, V. V.

"A Generaliz tion of the Method of Concil Discrements to the Mon-Homesen as Problem of the Theory of Shells," Dok. AM, 53, No. 6, 1947

KOVOZHILOV, V. V.

Fundamentals of the nonlineal theory of elasticity Leningrad, Gos. isd. tekhn.-teoret. lit-ry, 1946. 211 p. (Sovremennye problemy mekhaniki)

This book makes a twofold contribution to the available literature on elasticity; in addition to presenting a penetrating account of the modern thinking on the nonlinear theory, it is also a clear account of the fundamentals of the modern mathetatical theory as a whole. In fact, one gets the impression that the author's rejection of the usual linearizing assumptions in the derivation of the fundamental relations enhances (rather than encumbers) the reader's comprehension of the geometric and physical assumptions of the theory. In its use of mathematical tools the book falls between the engineering texts and, say, the work of Sokolnikoff and Mushelishvili. The use of tensors is avoided; however, the usually cumbersome component notation is employed with great skill. Except language difficulty, book would make an excellent companion piece to Prescott (Applied Elasticity Longmans, Green, London, '24) for use by 1st and 2nd yr grad. students. The present bk supplies the physical insight into the theory which is lacking in Prescott, but without the wealth of examples found in the latter work.

Analyses of strain, stress, and equilibrium equations are presented in full generality for homogeneous isitropic bodies and the classical relations are obtained by a 2-stage modification of the resulting expression. It is shown that the classical formulation contains 2 assumptions to the effect that (a) the strains and the angles of rotation of the body are small compared to unity, and (b) the products of the angles of rotation are small compared to certain corresponding components of strain. The specific strain energy of a body is represented as a series expansion in terms of the strain invariants and the stress-strain remaining are given in terms of the coefficients of this expansion. The specific

NOVOZHILDV, V. V., Fundamentals of the nonlineal theory of elasticity, L, 1948.

linearity assumptions underlying Hooke's law are thus made explicit. On the basis of two experimental observations of the behavior of the stress invariants, the same formulation (originally derived for conservative forces) is shown to yield the Hencky stress-strain equations for loading in plastic bodies. Two types of nonlinearity are shown to enter the problems of deformation of elastic bodies. The goemetrical nonlinearity results when the angles of potation of the body and the strains are no longer negligible compared to unity. The physical nonlinearity results when the angles of rotation of the body and the strains are non longer nigligible compared to unity. The physical nonlinearity results when the strains are no longer negligible compared to cartain physical constants of the material (proportional limits).

The chapter heading s are as follows: (I) Geometry of strain. (II) Equilibrium of a volume element; (III) Strain energy, boundary conditions, stress-strain law; (IV) Formulation of the elastic (boundary value) problem in terms of stresses; (v) The problem of elastic stability; (VI) Deformation of elastic bodies. Chapter (VI) presents applications of nonlinear theory to the following cases: (a) bending of thin plates and shells; (b) bending and torsion of rods. An extensive bibliography is appended.

Mathematical Reviews. Vol. 12, No. 8.

NOVOZHILOV, VV.

QA935.N77

AID 848 - M TREASURE ISLAND BOOK REVIEW Supercedes AID 515 - I

Sudpromgiz, TEORIYA TONKIKH OBOLOCHEK (Theory of thin shells). NOVOZHILOV, V. V. 1951. 344 p., 5,000 copies printed.

This book presents a thorough study by means of partial differ-ANALYSIS AND EVALUATION: ential equations including differential geometry and vectorial analysis of the general theory of thin shells, calculation of their stresses and deformations, with special application to some concrete problems of engineering. The author bases his presentation on the elastic theory of plates, on works of Kirchhoff, Lame, Gauss, Codazzi, Love and the Russian scientists B. G. Salerkin, A. I. Lur'ye, A. L. Gol'denveyzer, Kh. M. Mushtari and V. Z. Vlasov, but brings into the theory of shells much of his own approach and presentation, a development of more concise formulae and an emphasis on the extent of approximation which is made in some simplified mathematical expressions.

This book was intended for scientific workers and engineers engaged in the field of construction of boilers, turbines, instruments, airplanes, ships and in the design of thin coverings

1/13

AID 848 - M

and roofings. It can also be used as a textbook by students of senior grades of universities and technical institutions of higher

The book is divided into four parts: (1) general theory of elastic thin shells. 2) momentless (membrane) theory of shells. 3) calculation of cylindrical shells. 4) calculation of shells with surfaces of revolutions.

Part I. (pp. 5-85) starts with the outline of general concepts and hypotheses. Shells are defined as thin curved plates the thickness of which (δ) is very small in comparison to their other dimensions and their raddii of curvature R, namely

 \leq 1/50. A linear expression has been chosen for

the problem of calculating stresses and deformations, i.e., the displacements are assumed to be very small in comparison to the shell's thickness, and the deformations not to exceed the proportional limit. This theory of shells is presented as based on the theory of plates, not as first advanced by Cauchy and Poisson

2/13

AID 848 - M

(the method of series development on the power of z of all displacements and stresses, z being the distance of points from the middle surface of the plate) but mainly as suggested by Kirchhoff, who in determining the strain components for thin curved plates made the following assumptions: 1) Straight-line fibers of a plate normal to its undeformed middle surrace are deformed into normals of the deformed middle surface and remain straight-line, retaining their original length. 2) Stress components normal to the middle surface are small compared to other stress components and may be neglected in stress-strain relations. The method of Kirchhoff, even if not absolutely correct, is considered simpler and closer to the theory of beams. This method was later supplemented by A. Love and further improved and simplified into the canonical form of equations by A. I. Lur'ye and V. V. Novozhilov. The two assumptions made by Kirchhoff are maintained in this book and the extent of errors in simplified formulae is ascertained.

The general concept of the theory of surfaces is presented as an extention of the theory of thin flat plates and applied to thin shells. The differential geometry of a surface is analysed, whereby the notations of vector analysis are used.

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Two independent parameters α_1 and α_2 are introduced and constitute a system of orthogonal curvilinear coordinates for points on the surface. The differential relationships, between parameters and α_1 , α_2 (the so-called Lamé parameters) and the radii of curvature α_1 , α_2 are given. It is shown that four functions α_1 , α_2 , α_1 , and α_2 of the two parameters α_1 and α_2 , if they are selected at random, do not, in general, determine any surface, and that α_1 , α_2 can be considered as Lamé parameters and α_1 , α_2 as main radii of curvature of the surface only in such case when they satisfy the conditions of the equations of Gauss and Codazzi (equ. 2.30 and 2.28, p.16)

Next, formulae are derived expressing the displacement components of a point selected at random of the shell in relation to the displacement of a corresponding point of the middle surface (p. 17-20).

Analysis of the shell's deformation and the deformation of its middle surface shows that if the two starting assumptions are maintained for thin shells the law of changes of deformations along their width and of changes of their corresponding stresses can be considered linear (p. 26).

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The deformation of the shell's middle surface is adequately characterized by 6 parameters: \mathcal{E}_1 , \mathcal{E}_2 (parameters of unit elongation of the middle surface on coordinate axes), ω (parameter of shear of the middle surface), \mathcal{K}_1 , \mathcal{K}_2 (parameters characterizing changes in the curvature of the middle surface due to deformation) and \mathcal{T} (parameter characterizing the rotation of the middle surface) (p. 28).

Having studied the geometrical properties of the shell's deformation, the author analyses stresses (normal and shearing) and moments. The equilibrium of a shell element bounded by 4 surfaces perpendicular to the middle surface under the influence of interior and exterior forces is analysed and six equilibrium equations of stresses and moments are derived with ten unknown. (equ. 7.4, 7.8) This statically indeterminate problem is then solved by eliminating some of the unknown in applying the laws of elastic deformations and thus equations of continuity of stresses and displacements (equations of compatibility as related to thin shells) and strain-energy are developed. (equ. 10.10 and 10.16) Those equations are then rewritten, whereby the auxiliary complex variables are introduced and are called complex stresses.

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The equations are then presented, first, with the Poisson's ratio equal to zero (equ. 14.11) and then for any value of $/\!\!\!/$. (equ. 16.10 and 16.14) Those differential equations are finally given in a simplified form as presented by Mushtari-Vlasov. (equ. 17.7 and 17.14).

Part II. (pp. 85-166) deals with the momentless theory of shells in which in the analysis of the equilibrium of a shell element all moments are neglected. Such an omission is justified when the shell's rigidity is very small (membrane), or when the bending and rotation of the middle surface are very small. The basic equations derived in Part I are rewritten by neglecting the appropriate terms. The author analyses cases in which such omissions can be justified and the errors can be neglected. membrane theory is then applied to surfaces of revolution which as a general rule are subdivided into symmetrical and antisymmetrical loading. The lines of principal curvatures will be the meridians and the parallels. The method for solving differential equations in the membrane theory of surfaces of revolution is then outlined, based on the expansion of exterior loads and of all stresses acting in a shell into trigonometrical 6/13

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series on the angle & (equ. 6.4), whereby the author presents one formal solution for whole classes of surfaces obtained by revolution of circles, parabolas, ellipses and hyperbolas. The symmetrical deformation of shells with surfaces of revolution is analysed (equ 7.10) and in example the membrane theory is applied to: 1) different kinds of domes - spherical, paraboloid, ellipsoid, hyperboloid, 2) reservoirs (tanks) and their bottoms and heads - cyllindrical (closed on both ends) with spherical, elliptical and curved (with two radii of curvatures) bottoms and heads. Shells with constant stress distribution are then analysed, such as: 1) the drop-shaped reservoir, 2) the most advantageous form of a dome, that with a decreasing shell thickness at center. Next, antisymmetrical loadings of the "wind-type" are examined and the equations for such shells rewritten. (11.10, 11.11 and 11.13).

The membrane theory of shells is then applied to surfaces of revolution of second degree curves and also, as a specific case, to spherical shells. As an example, a dome resting on four columns is calculated. Affine transformations of similitude of known stresses of a shell of one form to stresses of second unknown shell of an arbitrary form appropriately loaded are

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presented. This method of the membrane theory permits the calculation of a shell of one form to be replaced by a calculation of a shell of a different form. As an example the calculation of an elliptical vessel head is replaced by the calculation of a semispherical. The statically determinate problems of the membrane theory, i.e., the cases where stresses can be calculated without determining displacements are then extended to statically indeterminate problems, i.e., where stresses can be calculated only by determining displacements. At first, displacements of a shell with a surface of revolution are discussed when the shell is symmetrically deformed. Deformations of such shells are analysed when no elongation or shear of their middle surface occur. Displacements of pure deflection for a spherical shell and for a catenoid are then calculated. The end of this part deals with the analysis of membrane stresses and displacements in determinate and indeterminate cylindrical shells: 1) closed (tube) and 2) open (cylindrical coverings and roofings).

Part III. (pp. 167-238) is devoted to the calculation of cylindrical shells. The author introduces complex variables and develops his own partial differential equations of the 8/13

AID 848 - M

fourth order for the calculation of cylindrical shells of any length (equ. 4.1). He examines these specific cases:
1) cylindrical shells reinforced with transverse ties,
2) curved plates formed as a section of a circular cylinder by two cuts along the generatrices and two cuts along the directrices, and derives equations for the expression of their complex stresses and strains. Calculation of stresses is next extended to an oval shell composed of four cylindrical plates, whereby the boundary conditions of the larger plates and of the smaller plates are analysed and the coefficients are then calculated in tabular form.

The author discusses next a simplified theory for long cylindrical shells (p. 202) whereby certain members in the general equations are disregarded and integration constants and coefficients are calculated in tabular form. The above method is then applied to the calculation of: 1) cylindrical plates (sections of circle cylinder), reinforced by transversal elastic ties, 2) tubes (long circular cylinders) of a cross section of an oval with 2 axes of symmetry freely supported at the ends, 3) cylindrical shells with stepwise changeable radii

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AID 848 - M

of curvature, 4) tubes with arbitrary boundary conditions on their end surfaces.

This part ends with a brief discussion of a semi-membrane theory of cylindrical shells. In developing and simplifying the above equations the author carefully points out the order of approximations. In solving the equations with complex variables real and imaginary portions of complex stress resultants and displacements must be considered separately.

Part IV. (pp. 238-334) analyses the surfaces of revolution. The basic equations for stress-strain calculations are again derived with complex variable notation. (equ. 2.17, 4.5 and 4.6) First, symmetrically loaded (boundary and surface) shells are considered. The solution of the linear differential equations and followed by an approximate integration is given (f 6) differential equation for symmetrical deformation (f 7) and approximate expression for stresses, moments and strains of a symmetrically-deformed shell of revolution (f 8). The coefficient of yielding for the rim of the shell is calculated.

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The outlined theory is then applied to cylindrical reservoirs and their bottoms (or vessel heads). Those calculations of symmetrically deformed shells of surfaces of revolution are based on the assumption that partial solutions can be arrived at from the momentless theory and the homogeneous problem can be determined as the first approximation which the asymptotic method offers. Such a procedure can be used for most problems. However, in some cases such a procedure can not be applied, e.g., in symmetrically strained toroid-shaped shells. elastic equilibrium of such shells can be reduced to a differential equation of the second order for the complex resultant T by which all displacements, stress resultants and couples can be expressed. Applying transformations to the corresponding homogeneous equation of a toroid shell and using approximations for the coefficients, a general solution is given in the form of Bessel functions, namely the Hankel functions of the first and second kind (p. 282), which are suitable for numerical computation throughout the whole interval. Particular solution of the equation under uniform pressure is given in the form of a Fourier series; its coefficients are expressed as continued fractions.

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Next, stresses are calculated in bottoms (for vessel heads) of a combined curved line, composed of a smooth connection of a shell having a form of spherical segment with a section of a torus, bound by two parallel circles. Such bottoms can be convex or convex-concave; some examples are given (cylinder, spherical segment, portion of a torus, interconnection of a cylinder, torus and sphere).

Shells of revolution under unsymmetrical loadings are investigated, whereby the "wind type" loads are considered.

General expressions for strains, stresses and moments are derived, and some simplified forms are presented in which certain members are neglected. A shell of revolution with only one border (such as a dome without openings) is then examined and the boundary conditions analysed. The method of integration of those equations is then outlined and also the measure of approximations ascertained. Next, spherical shells with arbitrary loadings are calculated. As an example of shells of revolution with negative Gauss curvature the catenoid shell is analysed. Finally an approximate theory of integration of shells

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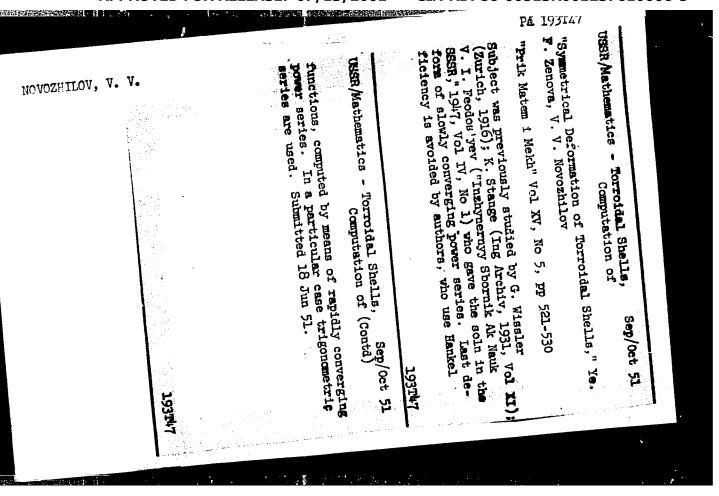
NOVOZHILOV, V. V., Teoriya tonkikh obolochek

AID 848 - M

of revolution of arbitrary form and under arbitrary loadings are discussed. At the end, an extensive literature is listed, divided according to the different parts of the book, a total of 163 titles, out of which 105 are Russian (1914-1950.

13/13

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610006-5



NOVOZHILOV, V. V.

WSE/Physics - Static Tests

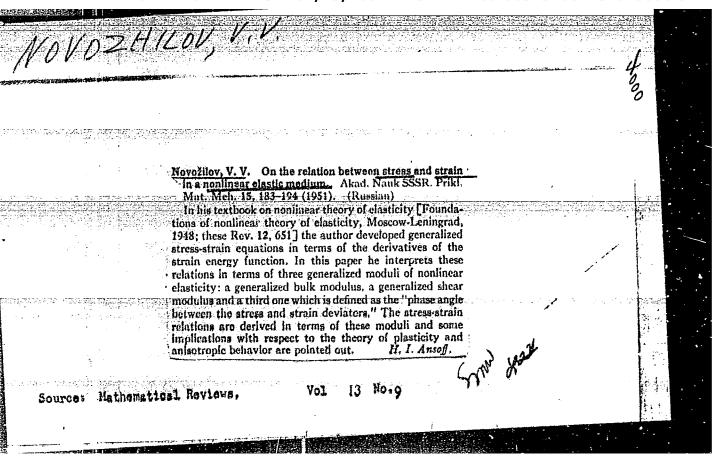
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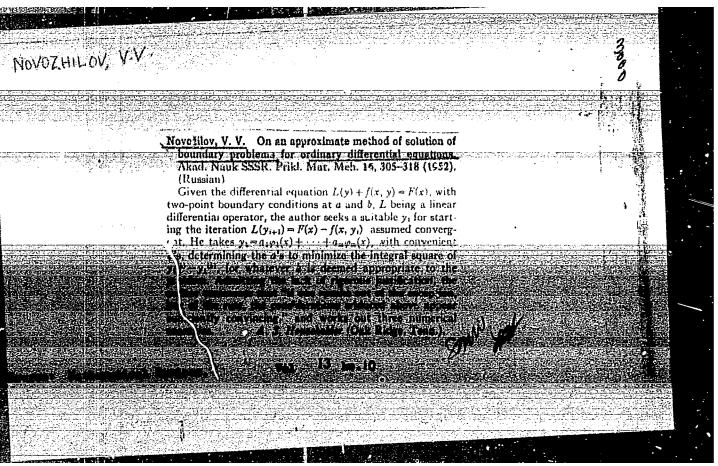
"Principles Governing the Treatment of the Results of Static Tests on Isotopic Materials,"
V. V. Movozhilov, Leningrad, Leningrad State U.

"Priklad Matemat i Mekh" Vol XV, No 6, pp 709-722

Novoshilov considers a nonlinear elastic medium and the strains and stresses generated in it. Shows that earlier obtained formulas remain effective for the case of results from static tests for any isotopic material. Obtains simpler solns than his previous ones. Submitted 6 Aug 51.

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2.	USSR (600) Deformation (Mechanics) Physical interpretation of invariants of stress used in the theory of plasticity, Prikl. mat. i mekh., 16, No. 5, 1952.	
9.	. Monthly List of Russian Accessions , Library of Congress, February, 1953. Unclassifi	ed.

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IOVOZH ILOV,

USSR/Mathematics - Plasticity theory

FD-839

Card 1/1

: Pub. 85 - 4/14

Author

: Novozhilov, V. V. (Leningrad)

Title

: Class of complex loads which is characterized by the preservation of

the directions of the main axes

Periodical

: Prikl. mat. i mekh., 18, 415-424, Jul/Aug 1954

Abstract

: Considers the frequently employed relations among the stresses and strains in an initially isotropic elastic-plastic medium. Notes their advantage for finding the exact description of the process of complex loads. Twelve references, 4 USSR (A. A. Il'yushin, G. A. Smirnov-

Alyayev, and author).

Institution

Submitted

: May 12, 1954

MOZHEVNIKOVA, M.K. (Leningrad); MOVOZHILOV, V.V. (Leningrad)

Appreximate theory of the hindered torsion of closed thin-walled reds accounting for distortions in the cross sections. Izv.AM SSSB. Otd. tekhn.nauk. me.9:72-83 5 '56. (MLMA 9:9)

(Elastic reds and wires) (Torsion)

NOVOZHILOV,

Novozhilov, V.V. (Leningrad) AUTHOR:

40-21-2-17/22

TITLE:

On the Center of a Deformation (O tsentre izgiba)

PERIODICAL: Prikladnaya Matematika i Mekhanika, 1957, Vol 21, Nr 2,

pp 281-284 (USSR)

ABSTRACT:

The author proves that for the determination of the center of a deformation it is not necessary to solve the problem of the deformation of a bar by a transverse force, but that it is sufficient to know the torsion of the bar. If the solution of the problem of torsion is known, then the center of the deformation can be found by quadratures. In his investigations the author restricts himself to bers with a

simply connected cross section.

SUBMITTED:

December 29, 1956

AVAILABLE:

Library of Congress

1. Bers-Defermation-Theory

Card 1/1

NOUUZHILOU, V. 4

AUTHORS:

Kadashevich, Yu. I., Novozhilov, V., V.

20-4-11/52

TITLE:

The Theory of Plasticity Which Takes Prestressing Into Account (Teoriya plastichnosti, uchityvayushchaya effekt

Baushingera)

PERIODICAL:

Doklady AN SSSR, 1957, Vol. 117, Nr 4, pp. 586-588 (USSR)

ABSTRACT:

The authors here suggest a theory of plasticity of quasi--isotropic bodies which is based on the following relations

between the plastic deformations and tensions:

 $\mathrm{d} \epsilon_{\mathbf{i}\mathbf{j}}^{\mathbf{p}} = \bar{\sigma}_{\mathbf{i}\mathbf{j}}^{\prime} \mathrm{d} \mathbf{f}(\bar{\mathbf{T}}); \ \mathbf{s}_{\mathbf{i}\mathbf{j}} = 2g(\Gamma) \epsilon_{\mathbf{i}\mathbf{j}}^{\mathbf{p}}, \ \bar{\sigma}_{\mathbf{i}\mathbf{j}} = \sigma_{\mathbf{i}\mathbf{j}} - \mathbf{s}_{\mathbf{i}\mathbf{j}}, \ \bar{\sigma}_{\mathbf{i}\mathbf{j}}^{\prime} = \bar{\sigma}_{\mathbf{i}\mathbf{j}} - (1/3) \delta \partial_{\mathbf{i}\mathbf{j}},$

 $\vec{T} = \sqrt{(1/2)\vec{\sigma}'_{ij}\vec{\sigma}'_{ij}}; \quad \vec{\Gamma} = \sqrt{(1/2)\vec{\epsilon}'_{ij}\vec{\epsilon}'_{ij}} \cdot \vec{s}_{ij}$ is denoted here as tensor of the remanent tensions and $\vec{\sigma}_{ij}$ is denoted as as tensor of the remanent tensions. In the theory considered tensor of the active tensions. In the theory considered here, the stretching-strain limit has the same form as in the theory of flow, but the center of the flow limit shifts according to the above-mentioned first equation. The following can be said with respect to the tensions S_{ij} :
A) They are equal to zero in the moment of the occurence of the first plastic deformations. B) They depend on the plastic deformations according to the principle of elastic

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*The Theory of Plasticity Which Takes Prestressing Into

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Account

curves generally pass between those curves which were determined by means of the theory of flow and the theory of small plastic deformation. d) A remanent deformation is observed with the circulation on the flow limit assumed with the theory of flowing. e) An essential part of the work which is applied to plastic deformation (~10%) is not converted into heat. There is 1 figure, and 7 references, 4 of which are Slavic.

PRESENTED:

October 7, 1957, by L. I. Sedov, Academician

SUBMITTED:

September 27, 1957

AVAILABLE:

Library of Congress

Card 3/3

SOV/2041

16(1);24(6)

PHASE I BOOK EXPLOITATION

Novozhilov, Valentin Valentinovich

Teoriya uprugosti (Theory of Elasticity) Leningrad, Sudpromgiz, 1958. 369 p. 5,000 copies printed.

Scientific Ed.: K.F. Chernykh; Ed.: Yu.S. Kazarov; Tech Ed.: L.M. Shishkova.

PURPOSE: This is a textbook for students, aspirants, engineers, and scientific workers specializing in strength analysis of various structures.

COVERAGE: The book is a development of the same author's monograph "Osnovy nelineynoy teorii uprugosti" (Fundamentals of the Nonlinear Theory of Elasticity) published in 1948. It considers all problems of the theory of elasticity from a single point of view without giving preference to any variant of the theory. The book includes a number of concepts such as that of a stress-free body, concen-

Card 1/12

Theory of Elasticity trated surface force, etc. The author thanks K.F. Chernykh, I Morozov, V.A. Nikitin, Z.P. Kamentseva, and V.Ya. Pavilaynen. There are 63 references: 35 Soviet, 11 English, 11 French, 6 German.	/2041 N.F. and	
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AUTHOR:

Kadashevich, Yu.I. and Novozhilov V. V.

40-22-1-7/15

(Leningrad)

TITLE:

A Plasticity Theory in Which Residual Microstresses are Taken Into Account (Teoriya plastichnosti, uchityvayushchaya

ostatochnye mikronapryazheniya)

PERIODICAL:

Prikladnaya Matematika i Mekhanika, 1958, Vol 22, Nr 1, pp 78-89 (USSR)

ABSTRACT:

The inequality dt > 0 is frequently applied as a criterion for the character of a deformation, where T is an expression which can be calculated from the different principal stresses of the problem. The limit which separates the range of elastic deformations from the range of plastic deformations then is generally determined by the equation T = C, where C is the value of the intensity of the tangential stresses in a certain moment. If the given relation is applied, then one obtains a plastic range, the limits of which are similarly enlarged in all directions, whereby, however, the form of the plastic range remains unaltered. But this contradicts to the observations. In experiments it is stated that the magnitude of the range does not only change, but also its form and fur-

Card 1/2

A Plasticity Theory in Which Residual Microstresses are Taken Into Account

40-22-1-7/15

thermore that a displacement of the range can occur. In the present paper it is tried to develop a plasticity theory in which the displacement of the center of the plastic deformation range is taken into account. The deformation of the range itself is neglected in this case, since different other authors calculated this influence and their results can be directly transferred to the present case too. With the aid of the author's results effects can be explained which could not well be theoretically comprehended up to now, e.g. the Bauschinger effect and the divergence of the main flow directions for plastic deformations with the principal stress directions. There are 7 figures, and 11 references, 3 of which are Soviet, and 8 American.

SUBMITTED:

October 5, 1957

Card 2/2

CHUVIKOVSKIY, V.S., referent; MOVOZHILOV, V.V., referent; PERNIK, A.D., referent; YEGOROV, I.T., referent; TITOV, I.A., referent; FIRSOV, G.A., referent; BOITSOV, G.V., imple, BASIM, A.M., referent Scientific engineering conference on hydromechanics and structural mechanics of ships. Sudostroenie 24 mo.7:86-87 J1 '58. (NIRA 11:9) (Naval architecture--Congresses)

BAIATEV, D.H.; BEZUKIADOV, V.F.; DEREVYANKO, Yu.G.; IOFFE, A.F.; ISAKOV, I.S.;
MATTES, H.V.; MOISEYEV, A.A.; NEGANOV, V.I.; MOVOZHILOV, V.V.;
PAVLENKO, G.Ye.; PERSHIN, V.I.; POPOV, V.F.; HETIVOT, V.S.

Seventy-fifth birthday of Academician IUlian Aleksandrovich
Shimanskii. Sudostroenie 24 no.12:66-67 D '58.

(MIRA 12:2)

(Shimanskii, IUlian Aleksandrovich, 1883-)

1) Annual Section 1, Number 9, 1709, 1700 hours 1) Annual Annual Properties of Error

MOVOZHILOV, V

The Theory of Thin Shells. Groningen, P. Moordhoff, 1959.

XVI, 376 p. diagrs., graphs, tables

Translated from the original Russian: Teoriya Tonkikh Obolochek. Leningrad, 1958.

References: P. 367-372.

S/179/60/000/01/033/054 E073/E535

AUTHOR:

Novozhilov, V.V.

TITLE:

On the Work of K. N. Shevchenko and Criticism of This

Work by D. D. Ivlev

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh

nauk, Mekhanika i mashinostroyeniye, 1960, Nr 1,

pp 189-190 (USSR)

ABSTRACT:

In the Nr 2, 1958 issue of Izvestiya Akademii nauk SSSR,

Otdeleniye tekhnicheskikh nauk, D. D. Ivlev published a contribution "On Some of the Work of K. N. Shevchenko

on the Theory of Plasticity The reply by

K. N. Shevchenko to the criticism of D. D. Ivlev was published in the Nr 9, 1958 issue as a letter to the editor "On the Problem and Method of Solving Certain ine Editorial Board has Elastic-Plastic Problems". requested Corresponding Member of the Ac.Sc., USSR V. V. Novozhilov to examine the published material and this article contains his comments and contributions Novozhilov considers that the to the controversy. critical comments of D. D. Ivlev were justified.

There are 6 Soviet references. Card 1/1

PHASE I BOOK EXPLOITATION

SOV/6064

Novozhilov, Valentin Valentinovich

Teoriya tonkikh obolochek (Theory of Thin Shells). 2d ad., rev. and enl. Leningrad, Sudpromgiz, 1962. 430 p. 5,500 copies printed.

Reviewer: R. M. Finkel'shteyn, Candidate of Technical Sciences; Scientific Ed.: K. F. Chernykh; Ed.: T. A. Kliorina; Tech. Ed.: P. S. Frumkin.

PURPOSE: This book is intended for scientific workers and engineers working in the fields of shipbuilding, boiler-, turbine-, and instrument fabrication, aircraft construction, and design of thin-walled coverings of structures. It may also serve as a manual for aspirants and senior students at shipbuilding institutes and other schools of higher technical education and universities.

COVERAGE: Problems associated with stress and strain analysis of thin shells (shallow shells) are discussed within the scope of linear theory, i. e., the displacements are assumed to be small compared to the shell thickness and the

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Theory of Thin Shells

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strains to be within the proportional limit. The book includes the general theory of the subject, as well as its application to a number of particular problems of practical interest. The term "complex" (stresses, displacements, etc.) used in the text means that there are involved functions of a complex variable). No personalities are mentioned. There are 288 references: 164 Soviet (4 of which are translations), 77 German, 35 English, 8 French, 2 Italian, 1 Dutch, and 1 Yugoslav.

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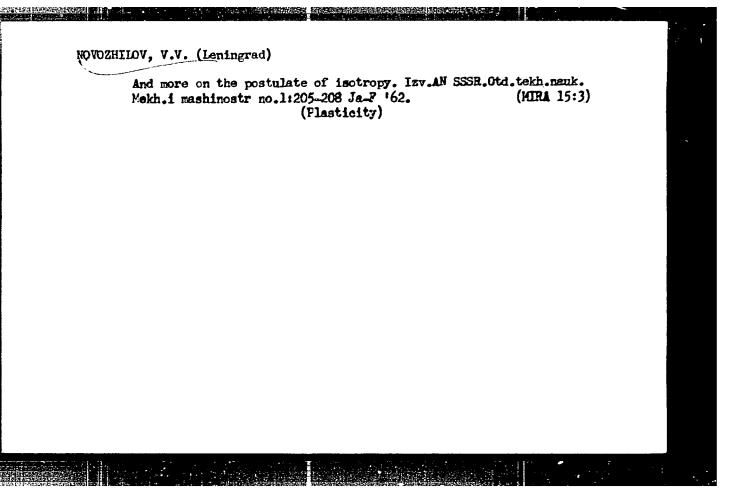
3

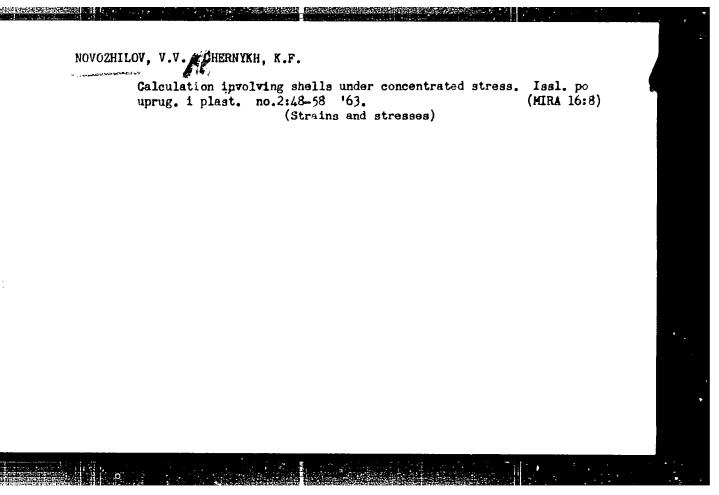
Ch. I. General Theory of Elastic Thin Shells l. Basic concepts and hypotheses

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ACCESSION NR: APLO15967

5/0040/63/027/005/0794/0812

AUTHOR: Novoshilov, V. V. (Leningred)

TITLE: On the relationship between stress and strain in elementary isotropic inelastic bodies (geometrical problem)

SOURCE: Prikl. matem. 1 mekhan., v. 27, no. 5, 1963, 794-812

TOPIC TAGS: tensor curve, stress strain relationship, inelastic solid body, orthonormal base tensor, subspace

ABSTRACT: Certain properties of tensor curves having a direct application in mechanics of continuous media particularly the stress-strain relationship of inelastic solid bodies, have been studied. Only three-dimensional symmetric tensors of second rank are considered, and analysis is given in Cartesian coordinates. These tensors are treated as elements of a six-dimensional space H₆ defined by

 $\frac{A_{ik}B_{kj}+B_{ik}A_{kj}}{\text{where A and B are the elements of the tensor }\Gamma_{i,j}\text{ also defined by}$

 $T_{ij} = \sum_{m=1}^{\infty} t_{(m)} h_{ij}^{(m)}$

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ACCESSION NR: AP4015967

Orthonormal basis vectors $\mathbf{h}_{i,j}^{\mathbf{m}}$ are shown to lead to two expressions defining the fundamental scalar and tensor properties of orthonormal base tensors, given respectively by

$$\sum_{m=1}^{8} (h_m)^2 = 3$$

and

$$\sum_{m=1}^{n} h_{ik}^{(m)} h_{il}^{(m)} = 2\delta_{ij}.$$

Proceeding from the orthonormal base, it is shown that H_6 can be divided into mutually perpendicular subspaces H_n and H_{6-n} . The properties of several subspaces are discussed, such as a deviator subspace D_5 , a deviator subspace with single general principal direction, and a subspace of coaxial deviators a_{ij} , b_{ij} related by

$$b_{ij} = A_1 a_{ij} + A_2 \left[a_{ii} a_{kj} - \frac{1}{8} (a^2) b_{ij} \right]$$

The conditions for obtaining a minimum number of tensors as basis in H₆ are considered. It is shown that in order to construct basis tensors in H₆ it is sufficient to have two three-dimensional symmetric tensors of second rank on condition that neither has a general principal direction, and further, it is

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ACCESSION NR: APLO15967

sufficient to have three three-dimensional vectors that are noncoplanar. The Serret-Frenet generalised formulas for H_0 tensor curves are derived, allowing one to determine a natural datum $r_{i,j}^{\rm R}$ for each tensor curve $R_{i,j}(s)$. The properties of tensor algebra established above are then applied to the case of an elementary solid body, and a relationship is established between the stress $\sigma_{i,j}$ and strain $E_{i,j}$. It is shown that the two-dimensional strain curve can be related to a two-dimensional, three-dimensional, and in the general case 5-dimensional deviator curve of the stress tensor. For the latter, this is given by

$$\begin{aligned} a_{ij}' &= f_0 b_{ij} + f_1 e_{ij}' + f_2 e_{ij}' + f_2 e_{ik}' e_{kj}' + f_4 e_{ik}' e_{kj}' + f_6 (e_{ik}' e_{kp}' e_{pj}' + e_{ik}' e_{kp}' e_{pj}') + f_6 (e_{ik}' e_{kp}' e_{pj}' + e_{ik}' e_{kp}' e_{pj}') + f_6 (e_{ik}' e_{kp}' e_{pj}' + e_{ik}' e_{kp}' e_{pj}') \end{aligned}$$

where the primed quantities are the deviators of the stress-strain tensors. Orig. art. has: 120 equations.

ASSOCIATION : none

Card 3/6

MOVOZHILOV, V.V. (Leningrad)

"Certain problems of plasticity under complex loading"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

ACCESSION NR: APLIOLOS69

5/0010/64/028/003/0393/01200

AUTHOR: Novozhilov, V. V. (Leningrad)

TITLE: Complex stress and prospects of a phenomenological approach to the study of microstresses

SOURCE: Prikladnava matematika i mekhanika, v. 23, no. 3, 1964, 393-400

TOPIC TAGS: complex stress, phenomenological approach, microstress, deformation, rheological property, load path, initial isotropy, flow theory, plastic deformation, dry friction, deviator, plastic resistance, metal fatigue

ABSTRACT: The author advocates a phenomenological approach to the study of certain aspects of plastic flow. In particular, he assumes initial isotropy, independent of resistive forces of time, so that these are essentially dry friction. Such assumptions apply to many metals and their alloys at moderate temperatures. The Baushinger effect should be especially helpful for the study of microstresses in polycrystals in order to learn more about metal fatigue. Orig. art. has: 15 formulas.

ASSOCIATION: none